MONTHLY WEATHER REVIEW.

(GENERAL WEATHER SERVICE OF THE UNITED STATES.)

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WAR DEPARTMENT,

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DIVISION OF TELEGRAMS AND REPORTS FOR THE BENEFIT OF COMMERCE AND AGRICULTURE.

INTRODUCTION.

This REVIEW presents a general summary of the meteorological data collected by the Signal Service during the month of September, 1882.

A special feature of the meteorology of the month has been the tropical hurricane charted as low area ii. It is remarkable for the violence of the winds near its centre, and for the great loss of property on land and sea. This cyclone presents the not unusual features of tropical hurricanes which have crossed land; on two occasions there were observed in the vortex of the storm, tired land birds of many varieties imprisoned and unable, on account of the violence of the winds, to escape. These birds therefore must have been on the wing at least the three days that it took the cyclone to travel from Cuba to the Gulf states.

The other marked features of the month have been:

1st: The excessive rains which fell along the New England and middle Atlantic coasts in connection with low area iv. These heavy rains resulted in very destructive freshets in the rivers and smaller streams, and caused the large excess over the mean rainfall in New England and the middle Atlantic states.

2d: The very hot and dry winds which prevailed over Kansas and Missouri on the 12th, 13th, and 14th. The temperatures recorded during the prevalence of these winds were, at many places, the highest ever observed in September, and are specially noted in the REVIEW under the heading "high temperatures."

That part of the REVIEW referring to International Meteorology presents the general weather conditions which prevailed over the northern hemisphere during the month of July, 1880. The prominent characteristics of that month was the prevalence of barometric maxima over the Atlantic ocean, and the absence of storms in that region. In Europe, hail-storms were of unusual frequency and severity during the month. Chart v. exhibits the paths of barometric minima for October, 1880, and will be found interesting as showing the tracks of the two disastrous storms that swept over Europe during the month. A noteworthy feature of the chart is the unusually large number of barometric minima, shown over northern Europe. On this chart are also exhibited the tracks of three typhoons that occurred over the China sea during the month.

In the preparation of this REVIEW, the following data received up to October 20th, have been used; viz.: the regular tri-daily weather charts, containing the data of simultaneous observations taken at one hundred and thirty-six Signal Service stations and fifteen Canadian stations, as telegraphed to this office; one hundred and ninety-four monthly journals and one hundred and eighty-two monthly means from the former, and twelve monthly means from the latter; two hundred monthly registers from voluntary observers; sixty-one monthly registers from United States Army Post Surgeons; Marine Records; International Simultaneous Observations; Marine Reports, through the co-operation of the "New York Herald," Weather Service; abstracts of Ships' Logs, furnished by the publishers of "The New York Maritime Register;" monthly reports from the local weather services of Kansas, Nebraska, and Missouri, and of the Central Pacific railway company; trustworthy newspaper extracts; and special reports.

BAROMETRIC PRESSURE.

[*Readings expressed in inches and hundredths.*]

The mean barometric pressure for the month over the United States and Canada, is shown by the isobarometric lines (in black) on chart number ii. The area of lowest mean-pressure covers the western parts of the middle and southern plateau districts, the lowest mean (29.84) being reported from Campo. From an examination of chart number ii., for previous months, it will be seen that, since March, the region of lowest mean-pressure has occupied nearly the same position. East of the one-hundredth meridian, the pressure is very evenly distributed. From the Missouri valley eastward to New England, the pressures range from 30.05 to 30.09; and in the Gulf states from 30.01 to 30.07. Compared with the previous month, the pressure is higher in almost every district; the most marked increase (0.16) occurring at Santa Fé. East of the Rocky mountains, the increase ranges from 0.01, to 0.11 being greatest at the more northerly stations. In Florida there has been a decrease of from 0.04 to 0.06, while along the Gulf coast the pressure has remained nearly the same. In the north Pacific coast region and in the western part of the northern plateau district, a slight decrease, ranging from 0.01 to 0.03, has also occurred. In California, there has been an increase of from 0.01 to 0.05, the greatest being reported from Campo.

DEPARTURES FROM THE NORMAL VALUES FOR THE MONTH.

Compared with the September means of previous years, the pressure in the northern plateau district and in the north Pacific coast region is from 0.01 to 0.05 below the normal, and in Florida, from normal to 0.02 below. With the exception of slight deficiencies at a few scattering stations, the pressure elsewhere over the country, is from normal to 0.16 above, the greatest departures occurring in the upper lake region.

BAROMETRIC RANGES.

The ranges of pressure during the month have varied from 0.20 at Campo, California, to 1.07, at Alpena, Michigan. In the several districts the barometric ranges have been as follows:

New England: From 0.65 at New Haven to 0.95 at Eastport.

Middle Atlantic states: From 0.63 at Lynchburg to 0.87 at Chincoteague.

South Atlantic states: From 0.64 at Jacksonville to 0.90 at Atlanta.

Florida peninsula: From 0.26 at Key West to 0.63 at Cedar Keys.

East Gulf states: From 0.42 at Starkville to 0.85 at Pensacola.

West Gulf states: From 0.40 at Indianola to 0.57 at Fort Smith, and 0.79 at Port Eads.

Rio Grande valley: From 0.36 at Rio Grande City to 0.47 at Eagle Pass.

Ohio valley and Tennessee: From 0.39 at Memphis to 0.62 at Chattanooga.

Lower lake region: From 0.63 at Cleveland and Sandusky to 0.88 at Oswego.

Upper lake region: From 0.65 at Chicago to 1.03 at Mackinac City and 1.07 at Alpena.

Extreme northwest: From 0.67 at Moorhead to 0.83 at Fort Stevenson and 0.84 at Saint Vincent.

Upper Mississippi valley: From 0.40 at Cairo to 0.77 at La Crosse and Saint Paul.

Missouri valley: From 0.49 at Springfield, Missouri, to 0.70 at Huron, Dakota.

Northern slope: From 0.53 at Cheyenne to 0.85 at Fort Keogh.

Middle slope: From 0.52 at Fort Elliott to 0.62 at Denver.

Southern slope: From 0.35 at Fort Davis to 0.61 at Henrietta.

Southern plateau: From 0.28 at Fort Grant to 0.42 at Santa Fé.

Middle plateau: From 0.53 at Winnemucca to 0.62 at Salt Lake City.

Northern plateau: From 0.44 at Dayton to 0.64 at Fort Missoula.

North Pacific coast region: From 0.55 at Portland to 0.60 at Roseburg.

Middle Pacific coast region: From 0.38 at San Francisco to 0.55 at Cape Mendocino.

South Pacific coast region: From 0.20 at Campo to 0.32 at Visalia and 0.43 at Yuma.

AREAS OF HIGH PRESSURE.

The following may be given as the general movement of areas of high-pressure, and as the conditions attending their development, during the month. Ten areas have had sufficient definiteness to merit notice; of these No. i., is the same as ix. of the August REVIEW, Nos. ii. and vi., of slight importance, were noted only in Canada, and the remaining seven (iii. iv. v. vii. viii. ix. and x.) were first observed off the Pacific coast, and all except vii. advanced to the eastward of the Rocky mountains.

No. I.—This is the same as ix. of August REVIEW, and passed into the Atlantic on the 3d, on which day it was merged in No. ii., and seems to have spread over an extensive area without losing its height. The highest pressure observed was 30.17 inches in Nebraska on the 1st.

No. II.—This area appeared in Ontario on the 2d and was merged with i. as above.

No. III.—This was first noted on the Pacific coast off Washington territory on the 2d. It moved nearly due east across the Rocky mountain plateau for two days and, on the afternoon of the 3d, was augmented by an offshoot from i. in southern Nebraska. From this point the motion was very rapid toward the northeast as it passed into the Atlantic on the 6th. The highest pressure was 30.32 inches at Chatham on the morning of the 6th.

No. IV.—This was first seen on the Pacific coast on the 4th, closely following iii. and was merged in the latter on the 6th. The highest pressure, 30.24 inches, occurred at Fort Assinniboine on the morning of the 5th.

No. V.—This area was first noted off the coast of Oregon on the 6th, can be followed in an erratic course for fifteen days finally passing into the Atlantic off the South Carolina coast on the 20th. It was central over the upper lake region on the 10th and there augmented by a portion of vii., as given below. From this point its course can be traced southeasterly toward the Atlantic; it was central over northern Alabama on the 14th and from thereit swung back on the 15th to Tennessee. From this point it moved steadly eastward passing into the Atlantic off the South Carolina coast. The highest pressure, 30.26 inches, was observed at Rockliffe on the 13th.

No. VI—This appeared in the upper lake region on the afternoon of the 7th, and spread over the whole northern boundary of the United States, east of Minnesota, by the 9th. On the next day it separated into two portions, one of which moved into the Atlantic, while the other was merged in v., as above. The highest observed pressure, 30.21 inches, was at Anticosti on the morning of the 9th.

No. VII—This first appeared off the coast of California on the 11th, but seems to have made no advance, as it disappeared off the coast of Oregon on the 16th.

No. VIII.—This appeared, like the last, off the coast of California, and was first noted on the 18th. It was evidently of great extent as, at midnight of the 18th, uniformly high-pressure prevailed along the whole northern boundary of the United States from the Pacific to Minnesota. It was divided by the Rocky mountains on the 20th. The western part will be designated hereafter as No. ix. On the 21st, viii. had advanced toward the east and had united with an area of high-pressure to the north of Canada, while an offshoot extended into Iowa. The pressures on the morning of the 21st were very high, namely: 30.48 inches in viii. at Father Point and 30.56 inches in ix.; at Fort Benton. No. viii. passed off the coast at Newfoundland on the 22d. The highest pressure was 30.56 inches at Chatham midnight of 21st.

No. IX.—On the 21st, this was central in western Montana; on the 22d, it had united with the off-shoot mentioned in viii. above, and we find a ridge of high-pressure (about 30.26 in.) extending continuously from British Columbia to Mississippi. On the next day, the 23d, this "high," somewhat contracted in dimensions, was central over Missouri, and from there advanced slowly toward the northeast, it being plainly evident over northern Canada on the last day of the month. In connection with the development and progress of areas viii. and ix., we find the severest frosts of the month; these occurred in Minnesota and Michigan on the morning of the 20th, in Nebraska on the 21st, and in Montana, Dakota and Minnesota on the 22d and 23d. (See "FROSTS.")

No X.—This was first noted off the coast of Oregon on the afternoon of the 26th. It remained nearly stationary till the 28th, but on the 29th had moved to the north of Montana, and on the last day of the month was merged with ix., as above. The highest pressure, 30.25 inches, was observed at Fort Buford on the afternoon of the 29th.

AREAS OF LOW BAROMETER.

Four areas of low barometer have been sufficiently defined to merit charting. Of these number i., developed near the Rio Grande valley, and, showing but slight energy, moved in a northerly track to the lake region.

Number ii., the most memorable storm of the month, perhaps of the year, was a tropical hurricane, first noted by this bureau south of Grand Turk island, but it is evident that at the time it passed that island it was a fully-developed hurricane, pursuing the usual parabolic path of a tropical storm, moving to the northwest until it reached the latitude of 30° north, when it recurved to the northeast.

Number iii., is the only depression traced from the Pacific coast, and which, after midnight of the 13th, suddenly developed unusual energy. It will be remembered on account of the

great loss of life that accompanied the foundering of the s.s. "Asia" in the Georgian bay.

The origin of low area number iv., is somewhat obscure. It never manifested special violence and ceased to exist as a well-defined low pressure on the 24th.

The following table gives the latitude and longitude in which each area was first and last observed, and the average hourly velocity:

Areas of low barometer.	First Observed.		Last Observed.		Average velocity in miles per hour.
	Lat. N.	Long. W.	Lat. N.	Long. W.	
	° ′	° ′	° ′	° ′	
No. I.	29 00	97 00	48 00	85 30	35.4
II.	21 00	71 00	46 00	61 00	14.7
III.	49 00	124 00	47 00	61 00	28.8
IV.	33 00	77 30	40 30	72 30	15.0

The following table gives the number of areas of low-pressure since 1873 during the month of September:

Year.	No.	Hourly velocity.	Year.	No.	Hourly velocity.
1873	11	——	1878	12	23.9
1874	13	——	1879	7	21.7
1875	8	——	1880	13	23.5
1876	10	23.8	1881	7	30.6
1877	8	15.8	1882	4	23.5

I.—At the last report of the month of August, a depression of slight energy was central near Indianola, Texas. At the morning observation of the 1st, the lowest pressure reported was at Little Rock; during the day the depression moved slightly to the east of north to lake Michigan, accompanied by light rains and light to brisk winds. On the 2d, the low area traversed lakes Michigan and Superior, passing beyond the limits of the chart, and rain generally fell in the lake region.

II.—The earliest information now in this office of the movement of this hurricane is from the meteorological observations taken at 10:00 a. m., local time, at Grand Turk island, when on the 2d of September the barometer was 29.79, wind ne., strong; and on September 3d the barometer was 29.76, wind sw., strong. The local report says, at Grand Turk island there was considerable wind and rain on Sunday, the 3d of September, which continued during the night up to daylight of the 4th. During the night there was experienced the heaviest thunder-storm on record since 1852. The shifting of the wind shows the passage of the storm to the south of Grand Turk island before the morning of the 3d.

The following reports extracted from the logs of the s.s. "Alene," and the brig "John Wesley," show that they crossed the path of the hurricane on the 3d and 4th, and in advance of its centre:

S. S. "Alene," Captain H. R. Hughes.

Date.	Time.	Lat. N.	Long. W	Bar.	Temp.	Wind.	Force.	Weather and remarks.
		° ′	° ′		°			
Sept. 3	7:11 a. m...	19 39	74 17	30.00	...	nne.	1	Clear and fine; sea-swell ne.
4	3:00 a. m...	.....	.....	.....	...	.....	...	Weather gloomy and threatening; wind backed to w., thence to southward and eastward.
4	4:00 a. m...	.....	.....	29.70	...	.....	...	
4	6:00 a. m...	.....	.....	29.65	...	.....	...	The gale at its height between these observations. Violent squalls from se., accompanied with heavy rain and hail; sea rising rapidly.
4	7:10 a. m...	23.11	74.25	29.95	...	se.	7	Overcast.
4	7:30 a. m...	.....	.....	29.75	78	se.	6	
4	8:00 a. m...	.....	.....	29.80	...	ese.	6	
4	9:00 a. m..	.....	.....	29.85	...	ese.	6	
4	10:00 a. m...	.....	.....	29.90	79	ese.	...	Sea subsiding.
4	11:30 a. m...	.....	.....	29.97	80	se. by e.	..	
4	12:00 noon ..	.....	.....	29.98	80	.....	...	
4	1:30 p. m...	.....	.....	29.98	80	ese.	5	
5	7:12 a. m...	27.05	74.30	30.13	...	e.	3	Clear and fine; sea-swell ese.

Brig "John Wesley," Captain John H. Hines.

Date.	Time.	Lat. N.	Long. W.	Bar.	Wind.	Force.	Weather and remarks.
		° ′	° ′				
Sept. 2	7:10 a. m...	22.30	74.25	29.84	ne by e.	4	Clear; sea smooth.
3	7:08 a. m...	.....	.....	29.51	ese.	10	Rain and blowing; very heavy sea.
4	7:11 a. m...	25.24	74.15	29.91	e.by s.	5	Fair; heavy cross swell.

The following observations were reported by the same captain as taken at Greenwich date and time during the passage of this storm:

Date.	Baro'eter.	Wind.	Remarks.
Sept. 3.			
12 noon.....	29.84	e.	A heavy bank at ese.; sky full of cirrus and cirrus-stratus, moving apparently to wnw. Vessel in Crooked Island passage; after getting through the passage found a high swell from ese.
4 p. m	29.86	.....	Wind very puffy, with sprinkling rain.
5 "	29.87	ene.	Wind and rain increasing.
6 "	29.83	.....	Blowing strong, with heavy rain and high sea; hove to.
8 "	29.51	.....	Blowing very hard, with very heavy rain.
10 "	29.18	e.	Blowing terrifically.
12 midn't ..	29.83	ese.	Do.
Sept. 4.			
2 a. m.....	28.94	se.	Do.
4 "	29.14	se. by s.	Moderating at times.
6 "	29.35	se. by s.	Do.
10 "	29.46	....	Moderating and clearing, but very high sea.
12 noon.....	29.51	ese.	All sails set; passed close to Rum Key.

The s. s. City of San Antonio experienced, on September 4th, in latitude N. 26° 45′, longitude W. 76° 50′, a very heavy swell from ese., with squally weather, and e. by n. wind. During these squalls the wind increased to a heavy gale, with barometer falling slowly until 8 p. m.

The following reports, received through the courtesy of Rev. Benito Vines, S. J., show the track of this meteor over the island of Cuba. Very copious extracts are given in order to preserve a permanent record of its passage over this island.

Observations taken at Isabella de Sagua, September 4 and 5, 1882.

Time.	Barometer.	Therm'er.	Wind.	Force.	Weather.
Sept. 4.		°			
12 m.	29.92	73.4	n.	brisk.	squally.
4 p. m.	29.80	72.5	nne.	gale.	"
5 "	29.76	72.5	nne.	"	"
6 "	29.72	72.5	nne.	"	misty and cloudy.
7 "	29.69	71.6	ne.	"	" " "
8 "	29.69	71.6	ene.	"	" " "
9 "	29.69	70.7	ene.	gale, with gusts.	raining.
10 "	29.69	70.7	e.	" "	"
11 "	29.71	69.8	e¼se.	" "	"
12 mid't	29.71	69.8	e¼se.	gale.	"
Sept. 5.					
1 a. m.	29.71	69.8	ese.	gale.	raining.
2 "	29.71	69.8	ese.	"	"
3 "	29.72	68.9	ese.	gale, with gusts.	"
4 "	29.74	68.9	se¼e.	" "	"
5 "	29.76	68.9	se¼e.	" "	"
6 "	29.78	68.9	se¼e.	" "	"
8 "	29.84	68.0	se.	fresh.	"
10 "	29.86	68.0	se.	"	"
1 p. m.	29.86	68.9	se.	"	"
3 "	29.86	68.9	se.	"	"
6 "	29.92	69.8	se.	"	cloudy.

The centre of the hurricane passed south of this station during the evening of the 4th.

Observations taken at Cienfuegos on September 5, 1882.

Time.	Bar.	Tem.	Wind.	Force.	State of weather.
Sept. 4.		°			
12 m.	29.95	91	ne. and n.	0	Light clouds moving rapidly.
4 p. m.	29.89	88	n.	0	Swift light clouds.
6 "	29.85	86	n.	0	" " "
10 "	29.84	82	n.	0	Stars visible in zenith.
12 midn't	29.82	82	n.	2	Large nimbus clouds between 1 and 2 quadrants.
Sept. 5.					
2 a. m.	29.76	80	nw.	3	Heavy gusts of rain.
8 "	29.66	80	nw.	3	" " "
9 "	29.59	78	nw.	4	Hurricanes, gusts.
9:30 "	29.50	78	wnw.	4	Violent gusts of wind and rain. Telegraph communication interrupted.
10 "	29.38	78	wnw.	4	Hurricane.
10:15 "	29.31	78	w.¼ nw.	4	The gloomy and cloudy weather obstructed the sight of the vessels in the bay. Vortex to n. and near.

Observations taken at Cienfuegos on September 5, 1882—Continued.

Time.	Bar.	Tem.	Wind.	Force.	State of weather.
		°			
10:30 "	29.27	78	w.	4	
10:45 "	29.22	78	w.	4	Greatest intensity.
11 "	29.18	78	w.¼sw.	4	Blowing with great force.
11:30 "	29.13	78	wsw.	4	" " "
11:45 "	29.15	78	sw.¼w.	4	Barometer rising.
12 m.	29.16	78	ssw.	4	Gloomy appearance, rain in torrents.
12:30 p. m.	29.18	78	ssw.	4	Gloomy appearance, rain in torrents.
1 "	29.27	78	ssw.	4	" " " "
1:30 "	29.32	78	s.¼sw.	4	" " " "
2 "	29.44	78	s.¼sw.	4	Less wind gusts and of shorter duration.
2:30 "	29.46	78	s.¼sw.	4	A few small vessels stranded and otherwise damaged.
3 "	29.46	78	s.	4	Gusts diminishing.
3:30 "	29.49	78	s.	4	Rapid gusts.
4 "	29.55	78	sse.	4	Heavy rain.
4:30 "	29.57	78	sse.	4	" "
5 "	29.60	78	sse.	4	" "
5:30 "	29.62	78	se.	4	" "
6 "	29.66	78	se.	4	Rain and guets.
7 "	29.70	78	se.	4	Strong wind with lasting gusts.
8 "	29.78	78	se.	4	" " " " "
9 "	29.79	78	se.	4	Heavy rain and strong wind.
10 "	29.80	78	se.	3	Gusts at intervals.
11 "	29.80	79	se.	3	" " "
12 mldn't	29.80	79	se.	3	" " "

The storm-centre moved to the north of Cienfuegos.

The following is an extract of a report furnished from Cardenas, September 6, 1882:

On Sunday, September 3d, at 6 p. m., the sky began to be covered with small clouds, moving rapidly along the horizon, with violent gusts of rain and slowly falling barometer.

September 4th, barometer stationary, with more frequent gusts of rain and wind.

September 5th, 6 a. m., repeated gusts of wind and rain; 11 a. m., increasing wind and rain; 2 p. m., wind veered to ene., with violent wind, heavy rain and falling barometer; 3 p. m., wind veered to e.; 6 p. m., wind shifted to e ¼ se.; 9 p. m., slowly rising barometer.

September 6th, at 1:00 a. m., the wind abated somewhat and veered to se., with continued rain; 4 a. m., wind se., decreasing steadily up to daybreak, when the puffs became still less frequent. The barometer, of which the mean height is 30.20 inches, had fallen to 29.80.

This house was badly damaged, though well protected, leaking everywhere. The garden was completely demolished, even the smallest plants having been carried away.

A few vessels in the harbor were injured, though not seriously; at 3 p. m., the barometer read 30.10, with rain at short intervals.

Observations taken at Matanzas on September 5, 1882.

Time.	Baro'ter.	Temp.	Wind.	Force.	Weather.
8 a. m.	29.97	82	nne.	3	showery.
10 "	29.95	82	ne.	3	"
12 m.	29.91	82	ne.	3.4	squally.
1 p. m.	29.89	82	ne.	3.4	"
2 "	29.85	82	ne.	3.4	"
3 "	29.82	81.5	ne.	3.4	"
4 "	29.77	81	ne.¼e.	4	"
5 "	29.74	80.5	ene.	5	"
6 "	29.74	80	e.	5	"
7 "	29.73	80	ese.	5	"
8 "	29.75	80	se.	5	"
9 "	29.79	79.5	se.	4	"
10 "	29.80	80	se.¼e.	4	showery.
11 "	29.82	79	se.¼e.	4	"
12 mid't	29.86	79	se.	3.4	squally.
1 a. m.	29.88	79	se.	3.4	showery & rainy.
2 "	29.90	78.5	se.	3	" "
3 "	29.93	80	se.	3	" "
4 "	29.94	79.5	se.	2	rainy.
5 "	29.95	79	se.	1	"
6 "	30.00	79	sse.	0	"

In consequence of the heavy sea and wind the brig "Pepe", the schooner "Carlotta" and the fishing vessel "Leon Despierto" were beached; all were saved however with the exception of the schooner "Carlotta", which was grounded on rocks. The storm-centre evidently went south of Matanzas.

Observations taken at Belen, Havana, September 5 and 6, 1882.

Time.	Baro'ter.	Therm'er.	Wind.	Vel. in miles per hour	Weather.
Sept. 5th.					
4 a. m.	29.88	79.9	nne.	10.1	Sudden gusts of wind and thunder.
5 "	29.90	82.0	nne.	15.7	Thunder.
6 "	29.88	82	nne.	11.3	Cloudy.
6.38 "	29.89	82.2	nne.	13.0	Rain began 6.47 a. m.
8 "	29.89	82.6	n.¼ne.	11.2	Thunder and lightning.
9 "	29.90	80.4	ne.¼n.	10.1	Cloudy.
10 "	29.89	84.6	nne.	11.2	Showery.
11 "	29.91	85.6	n.	13.4	Cloudy.
12 m.	29.87	85.6	nne.	15.7	Plain solar halo.
1 p. m.	29.84	86.2	ne.¼n.	19.0	Clouds dense and low; max. vel., 44.7.
2 "	29.80	85.6	n.¼ne.	17.9	Threatening, violent gusts; max. vel., 31.3.
3 "	29.82	83.3	.....	.....	.....
4 "	29.78	83.3	ne.¼e.	17.9	Cloudy and very dark; max. vel., 44.7.
5 "	29.76	82.6	nne.	22.4	max. vel., 40.3.
6 "	29.73	82.4	nne.	24.6	Wind gusts; max. vel., 53.7.
7 "	29.72	81.1	ne.	31.3	Violent wind gusts; max. vel., 40.3.
8 "	29.70	80.1	ne.¼n.	26.8	Rain and wind gusts; max. vel., 53.7.
9 "	29.70	78.4	ne.¼e.	24.6	Violent wind gusts; max. vel., 53.7.
10 "	29.69	78.1	ene.	26.8	Violent wind gust and very dark; max. vel., 69.3.
10.30 "	29.69	.....	ne.¼e.	24.6	Max. vel., 58.2.
11 "	29.66	.....	ene.	.....	Max. vel., 71.6.
11.30 "	29.64	.....	.....	.....	.....
12 mid't	29.63	.....	e.	35.8	Strong and constant wind gusts; max. vel., 58.2.
Sept. 6th.					
12.30 a. m.	29.62	.....	e.¼ne.	43.6	Violent and constant wind gusts; max. vel., 67.1.
1 "	29.59	.....	e.¼ne.	.....	.....
1.30 "	29.59	.....	e.¼ne.	40.3	Short hurricanes; max. vel., 78.3.
2 "	29.61	.....	e.	35.8	Short hurricanes; max. vel., 85.0.
2.30 "	29.64	.....	e.	43.6	Violent gusts, bar. rising; max. vel., 44.7.
3 "	29.65	.....	e.¼se.	35.8	Successive gusts; max. vel., 53.7.
5 "	29.72	76.5	e.¼se.	31.3	Violent gusts; max. vel., 44.7.
5.30 "	29.73	.....	ese.	26.8	Violent gusts; max. vel., 49.2.
6 "	29.73	76.3	se.	24.6	Light rain; max. vel., 26.8.
6.38 "	29.80	76.5	se.	24.6	Raining; max. vel., 26.8.
7 "	29.80	76.3	se.	24.6	Raining.
7.30 "	29.84	.....	.....	26.8	Violent wind; max. vel., 26.8.
8 "	29.84	77.2	se.	15.7	Violent winds.
9 "	29.87	76.3	ese.	17.9	Violent winds.
10 "	29.89	76.5	ese.	20.1	Rain and sudden gusts.
11 "	29.91	78.6	se.¼s.	.....	Constant rain.
12 m.	29.89	78.1	se.¼e.	15.7	Constant rain; max. vel., 20.0.
1 p. m.	29.90	77.4	se.	11.2	Mist.
2 "	29.87	78.1	se.¼e.	10.1	Mist.

The vortex went south of Havana between 12:30 a. m. and 2 a. m. of the 6th.

Observations Taken on Board the "Gral Duran" at Batabano, September 5 and 6, 1882.

Time.	Baro'ter.	Temp.	Wind.	Force.	Weather.
Sept. 5.					
6 p m.	30.15	77	n.	7	threatening.
7 "	30.12	77	nne.	7	heavy rain.
8 "	30.10	77	ne.	8	" "
9 "	30.08	78.8	ne. ¼e.	8	very threatening.
10 "	30.06	78.8	ene.	8	" "
11 "	30.02	78.8	e.	10	" "
12 mid't	29.90	78.8	ese.	11	gusts of rain.
Sept. 6.					
1 a. m.	29.85	78.8	se.	11	gusts of rain.
2 "	29.88	78.8	se.	10	heavy sh wers.
3 "	29.90	78.8	se.	10	rain and thunder.
4 "	30.00	77	se.	9	raining.
5 "	30.02	77	se.	8	"
6 "	30.05	77	se.	8	"
7 "	30.08	77	se	7	"

The centre of the storm passed south of the anchorage of Batabano.

Observations taken at Nueva Gerona, Pinos Island, during September 5 and 6, 1882, on board the s. s. "Nuevo Cubano."

Time.	Bar. aneroid	Wind.	Force.	Remarks.
Sept. 5th. a. m.	30.24	nnw.	moderate.	Sky threatening towards the 1st quadrant; heavy gusts of wind and rain at intervals.
12 m.	30.20	nnw.	fresh.	Same appearance.
4 p. m.	.....	nw.	brisk.	Continued gusts of wind and rain.
6 p. m.	30.16	ne. shifting to sw.	.....	Clear between 3d & 4th quadrants.
8 p. m.	30.04	nw.	.....	Wind and rain gusts.
9 p. m.	29.96	.....	.....	Wind and rain gusts of short duration.

Observations taken at Nueva Gerona, Pinos Island, during September 5 and 6, 1882, on board the s.s. "Nuevo Cubano"—Continued.

Time.	Bar. aneroid	Wind.	Force.	Remarks.
Sept. 6th. 2 a. m	29.84	sw.	.....	From 9 p. m. to 2 a. m the barometer fell steadily, attended by heavy wind and rain gusts; becoming very dark.
2.30 a. m.	.....	sw.	.....	Very violent squalls.
3.00 a. m.	29.88	.....	.....	.....
3.30 a. m.	29.92	.....	.....	.....
4.00 a. m.	29.96	.....	.....	.....
4.30 a. m.	30.00	.....	.....	.....

The vortex went north of the Isle of Pines.

Observations taken at Bahia Honda, September 5 and 6, 1882.

Time.	Barometer. (aneriod.)	Therm'er.	Wind.	Force.	Weather.
Sept. 5.					
8 a. m.	29.53	82.4	n.	6	Threatening.
12 m.	29.37	78.8	nne.	8	"
1 p. m.	29.29	78.8	ne. ¼ n.	8	"
2 "	29.17	78.8	ne.	9	"
4 "	29.17	78.8	ne. ¼ n.	10	"
4 "	29.17	77.0	ene.	10	"
5 "	29.25	77.0	e.	10	
6 "	29.29	78.8	e. ¼ ne.	10	
7 "	29.37	78.8	ese.	9	
8 "	29.41	78.8	se. ¼ e.	9	
9 "	29.45	78.8	se. ¼ e.	9	
10 "	29.49	78.8	se.	8	
12 mid't.	29.53	78.8	se.	8	
Sept. 6.					
3 a. m.	29.57	78.8	se.	6	
6 "	29.65	78.8	se.	3	

This shows the storm-centre moved south of Bahia Honda, but it is thought the dates and hours as copied, are not accurate.

After leaving the island of Cuba, the hurricane began to recurve towards the north and was encountered by the s. s. "City of Alexandria," Capt L. F. Timmerman, which entered the vortex of the storm between 6 and 7 p. m., of the 6th.

The following is an extract of the ship's log, furnished by co-operation of the "New York Herald Weather Service:"

Date and time. Local.	Date and time. Greenwich	Lat. N.	Long. W.	Barome'er. (Aneroid.)	Therm'r.	Wind.	Force.	Remarks.
Sept. 6.		° ′	° ′					
.....	.....	22 20	6 42′	29.85	84	n.	3	Gloomy.
12.00 m.	5.45 p. m.	30	86 0	29.40	84	nnw.	6	Set of sea ne.; sho'ery & threatening; high ne. sea.
2.00 p. m.	7.45 "	22 37	85 50	29.20	84	nw. & n.	9	" "
4.30 "	10.15 "	22 40	85 45	28.98	84	nw.	12	Rain & squally; sea ne. and nw.
5.30 "	11.15 "	22 42	85 40	28.98	84	calm	0	Fair and gloomy; sea ne. and nw. air full of tired birds.
7.00 "	12.45 a. m.	22 45	85 35	28.99	83	s. & e.	12	Rainy, squally and lightning; sea nw.
10.00 "	3.45 "	22 50	85 14	30.40?	82	sse.	9	" "
12.00 mid't	5.45 "	23 05	85 0	30.60?	82	sse.	8	Rain and squally; sea nw. and s.
Sept. 7. 4.00 "	9.45 "	23 16	84 28	30.70?	83	s. & e.	6	Fair; sea nw. & s.

The barometer in the last three observations is probably one inch too high.

The "City of Alexandria" on the 10th, 11th, and 12th, became again involved in this storm after it had recurved to the northeast and crossed its track in rear of the centre of the storm.

The following extract of the log of the s. s. "City of Puebla," Captain John Deaken, furnished by co-operation of the "New York Herald Weather Service," shows that the cyclone was felt by this vessel.

Date.	Lat. N.	Long. W.	Bar.	Temp.	Wind.	Vel'y in knots.	Weather & remarks.
	° ′	° ′		°			
Sept. 5.....	.....	.....	29.79	86	ne.	18	Passing showers; increasing wind.
" 5.....	.....	.....	29.62	.....	nne.	30	Blowing heavy.
" 6.....	22 48	86 11	29.60	85	une.	30	Squally; wind backing to nw.
" 6.....	.....	.....	29.50	85	nnw.	30	
" 6. midnight.	.....	.....	29.49	.....	.....	.....	
" 7.....	21 21	89 38	29.68	82	wsw.	6	Cloudy; wind off the coast—sea s.
" 8.....	21 21	89 38	29.70	86	ssw.	6	Hazy; black clouds to the n.
" 9.....	19 54	90 45	29.76	86	w.	6	Cloudy.

NOTE—The hours of observation are not given.

Between the 8th and 9th of September, this storm was encountered by the s. s. "Rio Grande," between latitude N. 25° 33′ and 25° 44′, and longitude W. 85° 45′ and 87° 20′. Captain A. C. Burrows, of that steamer, gives the following description, "On the 7th September, while stopping at Key West, I was informed that a cyclone had passed south side of Cuba, travelling nw. on 5th, with this warning I proceeded in a wnw. direction until midnight of the 8th, when appearances of the wind and weather and action of barometer induced the belief on my part that the storm was recurving and inclining to a nne. or n. course. The wind was then blowing an ordinary gale, with confused sea from s. to w. Direction of wind sse. The ship's head was then put se., and engines worked slowly, to just keep ship in position, and the situation remained unchanged for twenty-one hours, when, with violent rains and heavy puffs, the wind gradually, but quickly, worked round to sw.—w. and wnw., and the glass began to rise, weather becoming fine."

The following extract of the log of s. s. "Chalmette," Captain Frederick Read, shows that this vessel encountered the cyclone September 7th and 8th:

Date.	Time	Lat.	Long.	Bar.	Tem.	Wind	Force	Weather and Remarks.
	a. m.	° ′	° ′		°			
Sept. 6...	6.08	29 47	89 53	30.07	78	e.	2	clear.
" 7...	6.23	27 05	86 20	29.95	81	ese.	8	cloudy; h'vy sse. sea-swell
" 8...	6.37	24 22	82 47	29.99	83	se.	2	fair; mod. sw. sea-swell

Capt. F. Read makes the following remarks in regard to this storm: "Having been in close quarters with the terrible cyclone of the 8th and 9th instant, off the Passes, I will give an account of our experience on a direct line from the Passes to Tortugas. Crossed the bar at 5:12 p. m., (Greenwich time) the 6th instant, had fine weather, and light breezes from the ese., with smooth sea until 11 p. m., when I noticed a long swell heaving from the ese., which soon increased, so that by 4 a. m., of the 7th, the ship would occasionally pitch bows under. The wind at this time had also increased and was blowing a fresh gale from ese., the glass at 29.70, and soon commenced to rise slowly, the sea gradually hauling southerly and to the ssw., without diminishing, the wind still ese. strong. This showed us to be on the northern quadrant of a storm, and I knew there was much more wind to the s. and w. of us. It continued until 4. p. m., when both sea and wind gradually moderated with clearing weather, the glass at 29.90. By 8 a. m., of the 8th, when 40 miles nw. of Tortugas, had run entirely out of it, having then but a fresh breeze from se., and a moderate sea swell from sw.

"From Tortugas, north, had light variable weather with considerable rain; at 10:50 p. m. of the 11th instant, five miles east of Egg harbor, a light air from sw., and quite a heavy swell heaving in from se., a hazy sky and something that appeared like a fog bank all around the horizon, the glass at 29.50. The wind very suddenly came out from north, and in one hour was blowing a strong gale from nne., with heavy sea and raining almost continually until 5 a. m. (Greenwich time) of the 12th, the wind gradually veering to the nnw. At daylight, when four miles off Long Branch, the wind and sea moderated, the glass at 29.70, with clearing weather."

The Chalmette evidently crossed in front of the hurricane

as it was recurving to the northeast, and again encountered the same storm in its northern trajectory, and crossing its path in rear of the centre of the storm.

Captain James Wallace, s. s. "Burswell," who encountered this cyclone in latitude N. 26° 00′, W. 85° 40′, on the 9th instant, gives the following description: "At 1:30 (Greenwich time), or 7:40 a. m., local time, gale increased from south, sky very dirty, high cross sea from s. and wsw. eased engines and brought ship's head to the ssw. At 6 p. m. (Greenwich time), a fierce storm of wind and rain, with a high confused sea, ship flooded with seas fore and aft, and rain coming down in a whole sheet. At 8 p. m. of the 9th, wind hauled to sw. and more moderate, a high sea from wnw. At 13 hours, (Greenwich time) moderate gale at sw., a high sea from the wnw., ship lying head to it with engines eased. At 18 hours, wind wsw., force 4, kept ship on her course to the nw. At 24 hours (Greenwich time), of the 9th, wind w., a strong high sea from the north, with fine clear weather; lowest reading of barometer at 8 hours, 29.68."

The following is an extract of observations taken on board of this vessel:

Date.	Time.	Lat.	Long.	Bar.	Temp.	Wind.	Force.	Weather.
		° ′	° ′		°			
Sept. 8	6.35 a. m.	24 28	83 05	29.96	87	sse.	3	Fine weather, strong sea-swell.
" 9	6.23 "	25 51	85 34	29.70	87	s.	7	Dull and threat'ng strong sea-swell from sw.
" 10	6.20 "	26 26	86 45	29.78	83	w.	4	Fine and clear, strong sea-swell from n.

The following extract from the log of the s. s. "Lone Star," Captain R. B. Quick, furnished by co-operation of the "New York Herald Weather Service," shows the presence of this storm in latitude 28° 15′ N., longitude 88° 05′ W., on the 9th instant: September 9th, latitude 28° 15′ N., longitude 88° 05′ W., barometer 29.38, temperature 82, wind ese, hard gale, heavy cross sea from se. to e., and hard rain. Captain Quick, also took hourly observations during the passage of this storm, made the following report direct to this office: The s. s. "Lone Star," from New York for New Orleans encountered the cyclone of September 9th, in latitude 28° 15′, longitude 88° 05′, about sixty-five miles se. by e. from Port Eads. The storm-centre passed directly over the ship. From 7:00 a. m. to 4:00 p. m. (local time), the barometer readings, &c., were noted hourly as follows:

Time.	Barometer.	Temp.	Wind.	Weather.
7 a. m	29.40	82°	ese.	rain.
8 "	29.30	82	ese.	"
9 "	29.20	.....	e.	"
10 "	29.00	.....	e.	"
11 "	28.80	.....	e.	"
12 m	28.50	.....	ne.	"

Shortly after noon the wind died away and blew in gusts from ne. to n. and nnw., the rain had ceased and although the clouds were heavy and dense, the sun would occasionally burst through. There was a fog or mist that confined the area of vision to about three or four miles from the ship. In this calm-centre were many hundreds of land birds of great varieties, which sought rest on the rigging in great numbers.

Time.	Barometer.	Wind.	Weather.
1 p. m	28.40	n.	Misty.
1.30 p. m	28.38	nw.	Rain.
2 p. m	28.38	nw.	.....
3 p. m	28.60	nw.	.....
4 p. m	28.80	nw.	.....

From 4:00 p. m., the wind moderated and the sky cleared with fast rising barometer. At midnight moderate gale, passing clouds, barometer 29.70. The wind blew with great violence from ese. and e., but nothing to be compared with the fury of the nw. blast from 1:30 to 3:00 p. m. It was almost impossible to draw breath, the ship being covered in a perfect sheet of foam, it being impossible to see ten yards distant.

NOTE.—The barometer from which readings are taken stands about .02 inch high as compared with daily printed Signal Service reports.

The following is an extract from observations taken at the navy yard, Pensacola, Florida, showing the presence of this storm on the 9th and 10th instants:

Date.	Barometer.	Temperature.	Wind.	Velocity (miles)	Weather.
Sept. 9.....	30.06	75°	ne. and e.	7	Cloudy and lightning.
10.....	29.44	68	nnw.	26	Cloudy and rainy.
11.....	30.05	73	w. and n.	2	Fair.

Lieutenant John B. Collins, U. S. N., Navy-yard, Pensacola, gives the following details: At 4:08 a. m., of the 9th, the barometer was 30.06, wind ne. and e., velocity 7, sky overcast, clouds coming from ne., with lightning to the south. During the day the wind shifted to ne., accompanied by light squalls of wind and rain. At 0.08. p. m., the barometer was 30.05, wind ne., velocity 23, with heavy squalls of wind and rain. At 8.08 p. m., the barometer had fallen to 29.85, wind ne., velocity 31, with very heavy squalls of wind and rain. At midnight the barometer reached the lowest point, 29.44, the wind ne., velocity 31; during the succeeding hour the wind backed to n. and e. At 4:08 a. m., of the 10th, the barometer was still at 29:44, wind nnw., velocity 26; the squalls of wind and rain had slightly moderated. At 0.08 p. m., the barometer had risen to 29.70, wind nw., velocity 8, and the rain had ceased. During the day the wind backed to wsw., followed by clear weather. Between midnight and 2:00 a. m., of the 10th, the centre of the cyclone appears to have approached nearest to this station.

NOTE.—Time and dates given are Greenwich. Barometer not corrected.

On the 8th, the circulation of winds in the Gulf of Mexico showed the approach of a tropical hurricane, and at the morning observation of the 9th it was apparent that the storm-centre was not far distant from Port Eads, where, during the day, the barometer fell to 29.39, and a maximum velocity of wind 92 miles, ne., was reported. The vortex of the hurricane passed at midnight east of Pensacola, but quite near to it; lowest barometer 29.35. On the 10th, the storm, increasing in size, but diminishing in energy, moved in a northeasterly track over Alabama, Georgia, and South Carolina. The minimum pressures reported from stations of observations were, Montgomery 29.56; Atlanta 29.37; Augusta 29.49; Savannah 29.56; Charleston 29.60; Charlotte 29.55. On land the maximum winds recorded were, Atlanta 41, ne.; Augusta 32, e.; Charlotte 28, se. On the 11th, the storm, which still continued to exhibit great energy, moved in a northeasterly path across North Carolina, as charted, and entered the Atlantic ocean; from this day, until it disappeared beyond the limits of the charts of this bureau, the centre of the storm was at sea. The cautionary signals displayed for this storm, were justified by the following maximum velocities: Key West, 28, e.; Port Eads, 92, e.; Mobile, 27, n.; Pensacola, 50, n.; Cedar Keys, 54, s.; Jacksonville, 36, sw.; Savannah, 36, s.; Charleston, 36, s.; Smithville, 40, sw.; Wilmington, 27, w.; Macon, 36, sw.; Hatteras, 42, sw., and off-shore 30, w.; Kittyhawk, 35, s., and off-shore, 32, n.; Cape Henry, 35, nw.; Chincoteague, 31, e., and off-shore, 27, nw.; Delaware Breakwater, 32, e., and off-shore, 56, n.; Cape May, 29, e., and off-shore, 44, n.; Atlantic City, 31, n.; Barnegat, 48, ne.; Sandy Hook, 47, ne.; New York, 31, ne.; New Haven, 30, ne.; Block Island, 54, e., and off-shore, 32, n.; Newport, 26, n.; Provincetown, 34, ne.. and off-shore, 25, nw.; Boston, 26, ne.; Portland, 28, n., and off-shore, 26, nw.; Oswego, 26, ne.; Erie, 26, ne.; Sandusky, 40, ne.; Toledo, 28, ne.

The following extract from the report of the Signal Service observer at Port Eads exhibits the violence of the storm in that

vicinity. "The concrete blocks of the jetty walls were turned in all imaginable positions by the wind and the action of the Gulf waves. The railway by which the concrete was distributed is nearly entirely destroyed. The British s. s. "Haytian," Captain Peter, from Colon, with transit cargo for Europe, encountered the storm on the 9th instant, eighty-eight miles south of South Pass, hove to and rode out of the storm. Arrived September 10th, 2:30 p. m. Had heavy list to starboard on account of shifting of coal in bunker compartment of forehold. Bark "Windward," from Ship Island, with lumber for Europe, reported with fore and main masts gone. French s. s. "Clapeyron," Captain Guello, from Saint Thomas, reported having encountered the storm at 6:00 a. m., September 9th, sixteen miles off the South Pass bar. Damage—all boats broken, steering gear out of order, water-ballast tanks leaking, and bridge injured. Heavy list to starboard on account of shifting of coal. Lowest barometer 29.01. Rescued the crew of the American ship "Orient" about eighty miles south of this Pass, and saw another wreck, bottom up, with length of keel about one hundred and fifty feet. The "Orient" is a total wreck, entirely dismantled, upper decks amidships down to second deck gone, boats washed away, clean breach of sea through her cabin. Wreck of foremast, foretop-mast, and gallant-mast a mass of broken spars along deck and sides, also a portion of her mainmast. Cargo, lumber; value, $50,000.

British schooner "Ringdove," Captain E. Ward, bound from Ruatan to Mobile, cargo, green fruits and cocoanuts, encountered storm on 9th instant in latitude N. 26° 0′, longitude W. 87° 12′. Wind and rain from the south. Had to cut away mainmast to keep from foundering, leaking badly, and bananas nearly all rotted.

British schooner "Royalist," Captain E. Moore, bound from New Orleans to the Islands, had to put back on account of damage received. Rigging badly torn; one-half cargo of flour, wet; threw overboard one hundred barrels of rosin; four feet of water in hold.

Ship "Annie Gowdey," Captain Dent, from Pensacola for Belfast, with lumber, put into New Orleans for repairs. Fore and main-top-masts and mizzentop-gallant-masts cut away to save ship and cargo, which carried away lower mast-heads, poop-rail, ship's bells, jib-boom and everything attached, and stove in starboard boat. Deck, butts, water-way and covering-board seams badly strained, main rail broken, six feet two inches of water in hold. Hurricane from se. to nw., barometer at 12 midnight, 29.00; 3 a. m., 28.80; 6 a. m., 28.40; noon, 28.80.

Norwegian bark "Cato," Captain Kroger, from Rio Janeiro, with coffee, encountered storm eighty miles southeast of South Pass. Threw overboard four hundred sacks of coffee. Bulwarks stove in and vessel leaking, four feet of water in hold, some sails and reel-house blown away, lowest barometer, 28.01.

The following newspaper extracts give a description of the damage produced by this storm on land:

Havana, Cuba, 6th: The recent storm here extended over the greater part of the Island, doing the most damage at Villa Clara and Cienfuegos. The American bark "Idaho" and the British schooner "Sorata" were driven ashore at Cienfuegos.

Tuskeegee, Alabama, 9th: A heavy wind and rain storm visited this place last night. About 1,000 trees were blown down in the city. The storm was general in the country, and the damage to crops is estimated at $50,000.

Marvyn, Alabama, 9th: A destructive gale visited us on Saturday night, and resulted in very serious damage to the crops, and also destroyed a great deal of timber, blew down fences, &c.

Savannah, Georgia, 10th: The fury of the cyclone swept Savannah at three o'clock this morning. The velocity of the wind was forty-two miles per hour. The damage to the city is slight.

A double team near Beaufort was crushed by a falling tree; two men being killed and one injured. Reports from Ogeechee, Georgia, state that considerable damage was done to the crops by the storm.

Athens, Georgia, 10th: This town seems to have been an especial sufferer from the storm. The train on the Athens branch Sunday, was stopped seven times to cut away heavy trees which had fallen across the track. Along the street from the depot to the town, trees and timber were strewn, while some of the material for the extension road trestle was washed away. Over thirty five oak trees on the College Campus were uprooted or blown over, while many private groves are said to have been ruined, and fences demolished. The damage is estimated at $5,000. Advices from Warrenton indicate that great damage has been done along the Macon and Augusta road, fences blown down, trees uprooted, houses damaged and bridges swept away.

Atlanta, 10th: The storm prevailed here with terrible force, accompanied by heavy rain. Trees, fences, out-buildings and a few small houses were blown down, and tin roofs torn off.

Columbus, Georgia, 9th: A heavy rain and wind storm visited this section Saturday night and continued more or less during Sunday. Shade trees in the city were blown down by hundreds, and much damage has been done to cotton and corn, fences and forest timbers.

Macon, Georgia, 9th: Reports from all points in this section show that great damage was done to the cotton crop by the rain and wind storm of Saturday night.

Talbotton, Georgia, 9th: The most destructive rain and wind storm that has visited this county since 1856 occurred on Saturday night. The cotton and corn have been beaten down and lie upon the ground in the water. It is almost impossible to estimate the amount of damage done.

Pensacola, Florida, 9th: The storm was the severest ever known. The wind reached a maximum velocity of 55 miles per hour. The quarantine boat "Gov. Bloxham" capsized while en route from the quarantine station, and two men were drowned. The British bark "Roda" also capsized. Several vessels went ashore near the quarantine station and on Santa Rosa island. The interior wall of the new opera house was blown down, causing a damage of $1,500.

Jacksonville, Florida, 10th: Considerable damage is reported from middle and east Florida. The cotton crop is much dammaged, in some places one-half the crop being ruined. At Quincy, many houses, fences, trees, etc., were prostrated, and five persons were killed.

Cedar Keys, Florida, 9th: The cyclone reached this section between 9:00 and 10:00 p. m., accompanied by torrents of rain and vivid lightning. The water rose until nearly all the business portion of the town was submerged. The tide was at least two feet higher than in the famous storm of 1873. The piazza of the custom-house was torn off and floated away. Stores were flooded and logs by the thousands were piled up in every direction, intermingled with boats, boxes, barrels, etc., being borne along by the water. The loss is estimated at about $100,000. Cedar sticks to the value of $18,000 were washed away from Fabers' factory and their wharf entirely demolished. The Eagle Pencil Company were also heavy losers in this way, although both companies will undoubtedly recover much of their property. The mill men and cross-tie shippers have their logs and ties scattered in every direction. The railroad is destroyed for a distance of nearly four miles, and the trestle, three-quarters of a mile in length, has completely disappeared, iron and all.

Greenville, South Carolina, 10th: A terrific gale from the northeast continued from 1 a. m., to 3 p. m., Sunday, accompanied by heavy rain. The wind at one time reached nearly fifty miles per hour. Many trees were uprooted and fences blown down, but no accidents occurred. The storm was the severest since 1852.

Ridgeville, South Carolina, 10th: The cyclone struck this town with tremendous force, blowing down stores, barns, and fences, uprooting trees, and filling the streets with timbers of every description.

Pendleton, South Carolina, 9th and 10th: A terrific wind and rain storm passed over during Saturday night and Sunday.

Many trees were blown down, bottom corn flooded and thrown down generally; upland corn was very much blown over, and the cotton plant also to a great extent levelled.

Charleston, South Carolina, 10th: The schooner "Florence Shay" experienced a severe gale on Sunday, continuing for eighteen hours, during which the vessel lost foresail, forejib, jibstay, &c.

Spartanburg, South Carolina, 9th: Between Columbia and Union great damage was done to corn by yesterday's storm. The stalks are prostrated to the ground. Between Union and Spartanburg there is less damage, but the storm caused considerable loss everywhere.

Georgetown, South Carolina, 10th: Seven houses are reported blown away by the gale at Staple Lake, on the Pedee river.

New Orleans, Louisiana, 9th: At quarantine, the ground was submerged, and the people took refuge in the second story of the Government warehouse. Water from the Gulf was driven over many lower coast rice-fields, and the crops, where not gathered, are entirely destroyed. The amount of damage is estimated at $200,000.

Lynchburg, Virginia, 11th: The rains yesterday and last night caused a great rise in the James river and its tributary streams, overflowing the lowlands and damaging the crops and destroying property. Five hundred feet of trestle, used in extending the dam across the river, was washed away. The Richmond and Alleghany railroad bridge, across the Tye river, was washed away and other damage done along the line.

Boston, Massachusetts, 11th and 12th: The storm of last night was very severe. The rain came down in torrents, and the lightning was very vivid. The steamer "Harlem," on her way to New York, ran upon Great Ledge, off Wood's Holl, and was leaking badly. The schooner "Freeman," was struck by lightning. The brig "James Miller" lost her deck load and boat, had sails split, and sustained other damage.

Yarmouth, Massachusetts, 12th: The schooner "Mary Shields," with a load of lumber, encountered the storm near Cape Cod, and attempted to make Provincetown harbor, but lost jib and had mainsail split, the wind and sea increasing, she drifted ashore and grounded on the bars southeast of Chatham lights.

Eastport, Maine, 14th and 15th: The storm here was the fiercest that has visited this section for many months, and was accompanied by heavy rain. A small schooner loaded with lumber parted her chains, went ashore, and became a total wreck. The lumber was strewn in all directions. The chimney of the express office was blown down, and a number of fences wrecked. The schooner "Elihu Burritt," lying at anchor on the Wolves Bank, dragged her anchor, and to prevent going ashore the cable was cut, losing sixty fathoms of cable and the anchor.

Calais, Maine, 14th: Many shade trees were blown down, chimneys wrecked, and a few buildings suffered considerable damage. Schooner "Jed F. Duran," laden with coal, sank in Passamaquoddy bay. Loss on vessel, $5,000.

Portland, Maine, September 14th: The storm was the severest since last winter, the wind attaining a velocity of 36 miles per hour. Trees and chimneys were blown down, and awnings considerably damaged.

The following telegrams sent or received, arranged chronologically, show the work of this service in furnishing timely storm warnings in advance of this hurricane. The first dispatch was as follows: "Washington, September 5. Observer, Key West; 10:00 a. m. Up signals. Barometer falling rapidly at Havana, and appearances indicate a tropical storm southeast of that station. HAZEN."

At the same time the following warning was sent to the observers at Indianola, Galveston, New Orleans, Mobile, Cedar Keys, Pensacola, and Port Eads: "Signals are ordered up at Key West. Barometer falling rapidly at Havana, and appearances indicate a tropical storm southeast of that station. HAZEN."

At 12:50 p. m., September 5th, the notice below was sent to the observers at Jacksonville, Savannah, Charleston, and also to the press: "Appearances indicate a cyclone southeast of Havana. Its position and course cannot be defined at present. HAZEN."

At 2:45 p. m., the following report was received from the observer of the Signal Service at Jamaica: "Montego Bay, 6:00 a m., September 5, 1882. A storm center is to the westward of this island, moving in a northwesterly direction. The wind here is southerly, blowing fifteen miles per hour, and light rain is now falling."

After receipt of the Jamaica telegram, warnings were sent at 5:35 p. m. to the observers at Charleston, Savannah, Jacksonville, Indianola, Galveston, New Orleans, Port Eads, Cedar Keys, Pensacola, Mobile, and Key West: The tropical storm reported this morning as southeast of Havana is reported this afternoon as west of Jamaica, moving to the northwest. HAZEN.

On the morning of September 6th, a special warning was sent to the Maritime Association, New York, the press, and observers of Philadelphia, Baltimore, Norfolk, Cape Henry, Kittyhawk, Pensacola, New Orleans, Indianola, Brownsville, Delaware Breakwater, Hatteras, Key West, Cedar Keys, Punta Rassa, Mobile, Port Eads, and Galveston: The cyclone referred to in special notice of yesterday is now south of Cuba, moving in a northwesterly direction into the Gulf. Vessels leaving Gulf ports will encounter dangerous winds within the next two or three days. HAZEN.

September 7th, observer at Key West, 9:10 a. m.: Signals down. Cyclone reported south of Cuba has apparently moved in a northwest direction into the Gulf. HAZEN.

This information was also telegraphed to the observers at Indianola, Galveston, New Orleans, Mobile, Cedar Keys, Port Eads, and Pensacola.

September 8th, observers at New Orleans, Port Eads, Mobile, and Pensacola, 9:40 a. m.: Up signals. Appearances indicate a cyclone south of New Orleans, approaching the Gulf coast. HAZEN.

This note accompanying the direction to display warnings was also sent to observers at Cedar Keys, Key West, Indianola, and Galveston.

The telegrams will follow in order as sent.

September 8th, 11:45 a. m., Maritime Association, New York: The indications are that a cyclone, probably the one reported September 5, as south of Cuba, is approaching the Gulf coast near New Orleans. HAZEN.

September 9th, observer at Cedar Keys, 9:30 a. m.: Up signals. Cyclone central near Port Eads, moving in a northeast direction. HAZEN.

September 9th, observers at Indianola, Galveston, New Orleans, Port Eads, Mobile, Key West, and Pensacola: Cyclone central near Port Eads, moving in a northeast direction. HAZEN.

September 9th, Maritime Exchange, New York, observers at Baltimore, Norfolk, Philadelphia, Cape Henry, Kittyhawk, Hatteras, Sandy Hook, Barnegat, Atlantic City, Delaware Breakwater, Chincoteague, Wilmington, Smithville, Fort Macon, Savannah, Charleston, Jacksonville, Cedar Keys, and Key West: The Gulf cyclone has recurved and is now central off the mouth of the Mississippi. Its course cannot be defined at present, but it will probably move northeastward. The shipping on the south Atlantic coast is warned that dangerous winds may be anticipated to-night and to-morrow. HAZEN.

September 9th, observers at Jacksonville, Savannah, and adjacent ports, 5:20 p. m.: Up signals. Cyclone central south of Pensacola, apparently moving in a course a little north of east. HAZEN.

September 9th, observer at New York: Signals are ordered for Jacksonville, Savannah, and adjacent ports. Cyclone central south of Pensacola apparently moving in a course a little north of east. HAZEN.

September 9th, observers at Charleston, Smithville, Wilmington, Fort Macon, Hatteras, 6:10 p. m.: Up signals. Cy-

clone central south of Pensacola, apparently moving in a northeast direction. HAZEN.

September 9th, observer at New York: Signals are ordered up at Charleston, Smithville, Wilmington, Fort Macon, Hatteras. Cyclone central south of Pensacola, apparently moving in a northeast direction. HAZEN.

September 10th, observers at Kittyhawk, Cape Henry, Norfolk, Fort Monroe, Chincoteague, Delaware Breakwater, Cape May, Atlantic City, Barnegat, Sandy Hook, Crisfield, 12:25 a. m.: Up Signals. Cyclone central near Pensacola, moving in a northeast direction. Dangerous winds are anticipated on the Atlantic coast south of New York to-night and to-morrow. HAZEN.

September 10th, observer at New York, 12:25 a. m.: Up signals. Cyclone now central near Pensacola, moving in a northeast direction. Dangerous winds are anticipated on the Atlantic coast south of New York to-night and to-morrow. HAZEN.

September 10th, 12:47 a. m., observers at Eastport, Portland, Boston and adjacent ports, Provincetown, Newport, Block Island, New London, New Haven, Professor Baird, Wood's Holl; Commander Greene, U. S. Navy, Portsmouth, New Hampshire; Maritime Association, New York: The Gulf cyclone has moved in a northeastly course, and is now central south of Pensacola. Dangerous winds are anticipated on the Atlantic coast south of New York to-night and to-morrow, and on the New England coast to-morrow night. HAZEN.

September 10th, observers at New Haven, New London, Block Island, Newport, Provincetown, Point Judith, Boston and adjacent ports, 9:40 a. m.: Up signals. Cyclone central southeast of Atlanta, moving in a northeasterly course. Storm very severe. HAZEN.

September 10th, Professor Carpmael, Toronto, 9:50 a. m.: A severe cyclone is central southeast of Atlanta, Georgia, moving in a northeasterly course. Dangerous winds may be anticipated by to-night on the lakes. HAZEN.

September 10th, observers at Indianola, Galveston, New Orleans, Port Eads, Mobile, Pensacola, 10:30 a. m.: Hoist off-shore signals. Cyclone central southeast of Atlanta, moving in a northeasterly direction. HAZEN.

September 10th, observer at Baltimore, 12:05 p. m.: Up signals. Cyclone central southeast of Atlanta, moving in a northeasterly direction. HAZEN.

September 10th, observers at Oswego and adjacent ports, Rochester, Buffalo, Erie, Cleveland and adjacent ports, Sandusky, Toledo, Detroit and adjacent ports, Port Huron, Alpena, Mackinac City, Grand Haven and adjacent ports, Chicago, Milwaukee and adjacent ports: Cyclone central south of Atlanta, moving in a northeasterly course. Dangerous winds may be anticipated in the lake region to-night. HAZEN.

The note accompanying above telegram was also sent to Escanaba, Marquette, and Duluth.

September 10th, observers at Jacksonville, Savannah and adjacent ports, 5:40 p. m.: Hoist off-shore signals. Cyclone continues to move slowly in a northeasterly direction, and is now central in northern Georgia. HAZEN.

September 10th, 6:00 p. m., observers at Oswego and adjacent ports, Rochester, Buffalo, Erie, Sandusky, Cleveland, Toledo, Detroit, Alpena, Port Huron, Mackinac City, Chicago, Grand Haven, Milwaukee and adjacent ports, Escanaba: The cyclone continues to move slowly in a northeasterly direction, and is now central in northern Georgia. Dangerous winds may be anticipated, especially in the lower lake region, to-night and to-morrow. HAZEN.

September 10th, observers at Eastport, Portland, Boston, and adjacent ports, Provincetown, Newport, Block Island, New London, New Haven, and New York: The cyclone continues to move slowly in a northeasterly direction, and is now central in northern Georgia. Dangerous easterly winds will prevail on the middle Atlantic coast to-night, and may be anticipated on the coast of New England to-night or to-morrow. HAZEN.

September 11th, observers at Indianola, Galveston, New Orleans, and Port Eads, 12:35 a. m.: Signals down. HAZEN.

This information was also sent to the other Gulf ports.

September 11th, 12:45 a. m., Commander S. D. Greene, U. S. steamer "Despatch," Bar Harbor, Maine: The indications are increasing cloudiness and rain, increasing easterly winds, probably dangerous winds by to-night, and falling barometer. Cyclone continues to move slowly in a northeast direction and is now central near Charlotte, North Carolina. HAZEN.

September 11, observers at Cedar Keys, Jacksonville, Savannah, and adjacent ports, Charleston, 9:20 a. m.: Signals down. Storm-centre north of Charlotte, North Carolina. HAZEN.

This information was also telegraphed to observers at Indianola, Galveston, New Orleans, Port Eads, Mobile, Key West, and Pensacola.

September 11th, observers at Mobile, and Pensacola, 9:55 a. m.: Signals down. HAZEN.

September 11th, observers at Portland, Eastport, and adjacent ports, 10:20 a. m.: Up signals. Cyclone central near Charlotte, North Carolina, moving slowly in a northeasterly course. Strong easterly gales anticipated on the New England coast to-day and to-morrow. HAZEN.

This information was also telegraphed to the observer at New York.

September 11th, observers at Smithville, Wilmington, Fort Macon, Hatteras, Kittyhawk, Cape Henry, 5:05 p. m.: Hoist off-shore signals. Cyclone central northeast of Norfolk, moving in a northeast direction. HAZEN.

September 11th, observers at Grand Haven and adjacent ports, Chicago, Milwaukee and adjacent ports, Escanaba, 6:00 p. m.: Signals down. HAZEN.

September 11th, 6:10 p. m., observers at Eastport, Portland and adjacent ports, Boston and adjacent ports, Provincetown: Storm is now central south of Norfolk, moving northeast, unusually severe easterly gales will prevail on the New England coast to-night and to-morrow. HAZEN.

September 12th, observers at Hatteras, Kittyhawk, Cape Henry, 12:05 a. m.: Signals down. HAZEN.

September 12th, observers at Chincoteague, Delaware Breakwater, Cape May, Atlantic City, Barnegat, 12:20 a. m.: Hoist off-shore signals, cyclone now central near Atlantic City, moving in a northeasterly course. HAZEN.

September 12th, observers at Buffalo, Erie, Cleveland and adjacent ports, Sandusky, Toledo, Detroit and adjacent ports, Port Huron, Alpena, Mackinac City, 12:47 a. m.: Signals down. HAZEN.

September 12th, Professor Carpmael, Toronto, 1:00 a. m.: Cyclone central near Atlantic City, moving in a northeasterly course. HAZEN.

September 12th, Commander Greene, U. S. Navy, steamer Despatch, Bar Harbor, Maine: The cyclone is now central near Atlantic City, moving in a northeasterly course. It has been and is very severe on the New Jersey coast. Very severe northeasterly gales will be experienced on the New England coast to-day. HAZEN.

September 12th, observers at New York, New Haven, New London, Block Island, Newport, Provincetown, Boston, Portland and adjacent ports, 9:30 a. m.: Hoist off-shore signals. Storm is now central south of Nova Scotia. HAZEN.

September 12th, observers at Rochester, Oswego and adjacent ports, 10:00 a. m.: Signals down. HAZEN.

September 12th, observers at Wilmington, Smithville, and Fort Macon, 10:02 a. m.: Signals down. HAZEN.

September 12th, observers at Baltimore, Norfolk, 11:55 a. m.: Signals down. HAZEN.

September 12th, observers at Chincoteague, Delaware Breakwater, Cape May, Atlantic City, Barnegat, Sandy Hook, 5:40 p. m.: Signals down. HAZEN.

September 12th, observers at New York, New Haven, New London, Block Island, Newport, Provincetown, Boston and adjacent ports, 5:40 p. m.: Signals down. HAZEN.

September 13, observers at Portland, Eastport and adjacent ports, 12:05 a. m.: Signals down. HAZEN.

As soon as the storm was over, General Hazen telegraphed to all the observers at the Gulf and Atlantic ports, to collect statistics of the values of the vessels and their cargoes that were detained from sailing, by the cautionary signals, warning them of dangerous weather. What losses resulted from the storm are not yet known, but captains who were caught in it say, that it was the worst weather they had ever experienced.

It has been found impossible to secure full and even adequate returns of the vessels detained. The observers at New York, Baltimore, and Philadelphia make no returns, having been unable to secure statistics. The reason given is, that at these ports the harbors are so long, and there are so many safe anchorages toward the sea, that on the approach of a storm all vessels that are ready to sail go to these anchorages, and wait for the clearing off-shore wind. Boston's returns are also inadequate, and it is probable that more good was done coasters than ocean going vessels, the masters of the latter taking more risks owing to the greater size of their ships.

Statistics enough have been obtained, however, to give some idea of the very large amount of property that was prevented from going to sea in the cyclone, or that ran into harbor after seeing the signals. The total amount of the figures sent by the observers is $6,460,586. It is estimated at the signal office that at least $13,000,000 of property and many persons remained safely in harbor on account of the warnings given by the signal office, and that the saving in this one storm pays the expenses of the service for at least ten years.

III.—On the 12th, a depression entered British Columbia and advanced very rapidly to the eastward, moving on the 13th over Manitoba, Dakota, and Minnesota, the centre of low area being charted at the last observation of the day over the western part of Lake Superior. The pressure at Duluth was 29.58, or 0.33 inch below the normal; thus far the depression had exhibited very slight energy, but in the hours from midnight to morning the low area developed into a storm of great violence and pursued, during the day, an easterly track over the Province of Ontario and entered the Saint Lawrence valley. High south to west winds were reported from all the lakes except Lake Superior.

The following newspaper extracts give a description of the disasters caused by this storm in Ontario and New York.

Collingwood, Ontario, 14th: The steamer "Asia" was lost in the storm on Georgian bay, on Thursday, the 14th, and of one hundred passengers on board only two are known to have survived.

Oswego, New York, 14th: The gale was the most severe of the season. The schooner "Louise" foundered at "Deep Hole," near Port Rowan, Ontario; schooner "John T. Mott," with grain, was driven ashore off Hinkley's Point, Wolf Island; schooner "Mystic Star" was dismasted and damaged to the amount of $2,000; schooners "Mary Ann Lyden," "Two Brothers," and "Annie Minnes" were more or less damaged; schooner "T. R. Merritt" had her sails blown away and was damaged about $500; schooner "Plow Boy," laden with wheat, was driven into Pultneyville.

The lowest pressures recorded were: Alpena 29.48, Rockliffe, Canada, 29.19, Montreal 29.29.

On the 15th and 16th, the storm-centre moved to the eastward over Maine and the maritime provinces, but with diminishing energy.

Cautionary signals displayed for this storm were justified by the following maximum velocities:

Alpena 37 w., Port Huron 28 w., Detroit 26 w., Toledo 28 sw., Cleveland 25 w., Erie 34 w., Buffalo 40 s., Rochester 56 w., Oswego 25 w., Eastport 42 se., and off-shore 34 nw.; Portland 36 s., and off-shore 28 nw.; Boston, off-shore 35 nw., Provincetown 32 se., Newport, off-shore 35 w., Block Island 30 s., and off-shore 32 n.; New London 27 s., New York, off-shore 28 nw.; Sandy Hook 37 nw., Barnegat 32 nw., Atlantic City 25 s., Cape May 39 s., and off-shore 32 nw.; Delaware Breakwater, off-shore 28 n., and Chincoteague, off-shore 27 nw.

IV.—On the 22d, there was a sharp fall in pressure on the North Carolina coast, and at midnight there was a well-developed low-area of slight extent west of Hatteras, the lowest barometers along the track being more than 0.25 inch below the mean pressure. On the 23d, the centre of depression moved in a northeasterly track along and near the middle Atlantic coast, when the winds shifted from high southeast to southwest. Cautionary signals displayed along the track of the storm were justified from Fort Macon, North Carolina, to New London, by the following maximum velocities: Fort Macon, 28 sw.; Hatteras, 48 se., and off-shore, 25 n.; Kittyhawk, 28 se.; Cape Henry, 32 e.; Chincoteague, 28 nw.; Delaware Breakwater, 31 nw.; Cape May, off-shore, 40 nw.; Atlantic City, 32 se.; Barnegat, 38 s.; Sandy Hook, 40 n.; New Haven, 25 n.; New London, 28 se.

INTERNATIONAL METEOROLOGY.

International charts iv. and v. accompany the present number of this REVIEW. Chart iv. is published for July, 1880, and continues the series of that chart begun in January, 1877. Chart v. is prepared for October, 1880, and continues the series of that chart begun November, 1877. In the description of these charts, much valuable information has been obtained from the "Monatliche Uebersicht der Witterung," published by Professor Dr. G. Neumayer, Director of the German Marine Observatory at Hamburg, and from the "Bulletin Mensuel," published by Mr. Marc Dechrevens, of Zi-Ka-Wei, China.

Chart iv. exhibits the mean pressure, mean temperature, and the prevailing direction of the wind over the northern hemisphere and at certain isolated stations in the southern hemisphere, as determined from one observation taken each day at 7:35 a. m., or 0:43 p. m. Greenwich mean time.

The lowest mean pressures are shown over British India, the isobar of 29.50 (749.3) occupying the Punjab; southward of that region, the pressure gradually increases, until the isobar of 29.80 (756.9) covers the southern part of the country.

A second area of low-pressure, 29.70 (754.4), occupies Siberia. northeastern Russia, China, and Japan.

The third area, indicated by the isobar of 29.80 (756.9), covers central and southern Russia and Scandinavia. The isobar of 29.90 (759.4) extends from the northern part of North America northeastward over the Atlantic toward Iceland, thence southerly over Ireland, the southern part of England, and over central Europe.

The area of highest pressure, 30.20 (767.1), is found over the Azores, and the isobar of 30.10 (764.5) occupies mid-ocean between the parallels of 40° and 60° north latitude. In the United States, the area of highest mean pressure occupies the Southern states and the north Pacific coast, where the highest pressures were, 30.09 (764.3) and 30.11 (764.8(, respectively.

Compared with the preceding month (June), the mean atmospheric pressure over North America shows no material change, except over the region lying north of the fiftieth parallel. In the United States, a slight decrease, ranging from .01 to .03 inch, occurred over Alabama and Georgia; elsewhere, the pressure remained unchanged. A decrease of .10 inch is shown over Hudson's Bay; in Ontario, there was no change, and over the Gulf of Saint Lawrence, the decrease was very slight.

In Europe, the changes of barometric pressure were very slight, and caused no material change in the positions of the isobars, except over Spain, where the mean pressure was about .05 inch below that of the preceding month. In Greenland, the pressure has decreased .10 of an inch, while an increase of .06 inch is shown over Iceland.

In Asia, the mean pressure over Hindostan ranged from .03 to .10 inch above that for June, and in China, Japan, and Siberia, it was .10 inch below the mean for the preceding month.

Compared with the corresponding month of previous years, the pressure was slightly below the normal along the Atlantic